

Applicant: M. Yamamoto, et al.
U.S.S.N. : 09/925,907
Response to Final Office Action
Page 3 of 41

Amendments to Specification

Pages 13-14, rewrite the paragraph starting at line 23 on page 13, to read as follows:

Since a shape of a recordable region on a magnetic recording medium attains a better approximation to a shape of contour lines of a magnetic field distribution for recording (that is a magnetic field having a component vertical with respect to a film surface, in case of use of a vertical recording medium) in a vicinity of the recordable region as the magnetic field distribution for recording is lowered sharper, inventors of the present invention have found out that, attained is a good approximation of a shape of an edge of the recordable region to a shape of the contour lines of the recording magnetic field distribution, by locating the edge of the recordable region at a position that gives a largest lowering rate/ a maximum lowering of recording magnetic field intensity. Furthermore, the inventors of the present inventions found out that the contour lines of the recording magnetic field distribution attains a rectangular shape by using a magnetic recording head by which the recording magnetic field is distributed in a rectangular shape on the magnetic recording medium, so that the edge of the recordable region is rectangularly shaped so as to record the magnetic bit in the rectangular shape.

Pages 14-15, rewrite the paragraph starting at line 22 on page 14, to read as follows:

In short, a magnetic signal recording method of the present invention, comprising the step of recording arbitrary information in a region on a magnetic recording medium where a coercive force has been varied with local heating, in accordance with a magnetic field from a magnetic recording head, wherein an edge of a recordable region on the magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on the magnetic recording medium has been varied, and (b) magnetic field intensity in an in-track position (a position in the track direction) in which a magnetic field distribution generated by the magnetic recording head is lowered at a maximum/ greatest rate.

Applicant: M. Hamamoto, et al.
U.S.S.N. : 09/925,907
Response to Final Office Action
Page 4 of 41

Page 15, rewrite the paragraph starting at line 11, to read as follows:

Therefore, it is possible to attain the good approximation of the shape of the edge of the recordable region to the shape of the contour lines of the recording magnetic field distribution, when the edge of the recordable region is located in such a position that gives substantial equality between (a) the coercive force in a region in which the coercive force of the magnetic recording medium has been changed, and (b) the magnetic field intensity in which the magnetic field distribution formed by the magnetic recording head has a largest lowering rate/~~is lowered~~ at a ~~maximum~~ in an in-track direction position.

Pages 16-17, rewrite the paragraph starting at line 12 on page 16, to read as follows:

Another magnetic signal recording method of the present invention, comprising the step of recording arbitrary information in a region on a magnetic recording medium where a coercive force has been varied with local heating, in which a single-magnetic polar head is used as a magnetic recording head, the magnetic recording medium having an axis of easy magnetization vertical to a film surface of the magnetic recording medium, and the single-magnetic polar head generating a magnetic field having a component vertical to the film surface, while having a main magnetic pole wider than a track pitch, wherein an edge of a recordable region on the magnetic recording medium is located in a position where substantial equality is attained between (a) a coercive force in the region where the coercive force on the magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the single-magnetic polar head in a position in which the component is lowered at a ~~maximum~~/greatest rate in a trailing edge of the main magnetic pole in the track direction, the component being vertical to the film surface.

Applicant: M. Hamamoto, et al.
U.S.S.N. : 09/925,907
Response to Final Office Action
Page 5 of 41

Page 17, rewrite the paragraph starting at line 8, to read as follows:

Therefore, the approximation of the shape of the edge of the recordable region to the shape of the contour lines of the recording magnetic field distribution by locating the edge of the recordable region in the position that gives the substantial equality between (a) the coercive force in the region in which the coercive force on the magnetic recording medium has been changed, and (b) the component, which is vertical with respect to the film surface of the magnetic recording medium, of the magnetic field intensity of the single-magnetic polar head in the position where the magnetic field intensity is lowered at a maximum/the largest rate in the trailing edge of a main magnetic pole in the track direction.

Pages 18-19, rewrite the paragraph starting at line 12 on page 18, to read as follows:

Still another magnetic signal recording method of the present invention, comprising the step of recording arbitrary information in a region on a magnetic recording medium where a coercive force has been varied with local heating, in which a ring head is used as a magnetic recording head, the magnetic recording medium having an axis of easy magnetization vertical to a film surface of the magnetic recording medium, and the ring head generating a magnetic field having a component vertical to the film surface, while having a ring head recording gap width that is wider than a track pitch, wherein an edge of a recordable region on the magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on the magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the ring head in a position in which the component is lowered at a maximum/greatest rate in a vicinity of a position right below a leading edge of the ring head recording gap in the track direction, the component being vertical to the film surface.

Applicant: M. Hamamoto, et al.
U.S.S.N. : 09/925,907
Response to Final Office Action
Page 6 of 41

Page 19, rewrite the paragraph starting at line 8, to read as follows:

Therefore, it is possible to attain the good approximation of the shape of the edge of the recordable region to the shape of the contour lines of the recording magnetic field when the edge of the recordable region is located in the position that gives substantial equality between (a) the coercive force in the region in which the coercive force of the magnetic recording medium is changed, and (b) a component, which is vertical to the film surface, of magnetic field intensity of the ring head in a position in which the component is lowered at a maximum/ greatest rate in a vicinity of a position right below a leading edge of the ring head recording gap in the track direction.

Pages 20-21, rewrite the paragraph starting at line 11 on page 20, to read as follows:

Yet another magnetic signal recording method of the present invention, comprising the step of recording arbitrary information in a region on the magnetic recording medium where the coercive force has been varied with local heating, in which a ring head is used as a magnetic recording head, the magnetic recording medium having an axis of easy magnetization parallel to a film surface of the magnetic recording medium, and the ring head generating a magnetic field having a component parallel to the film surface, while having a ring head recording gap width that is wider than a track pitch, wherein an edge of a recordable region on the magnetic recording medium is located in a position in which substantial equality is attained between (a) a coercive force in the region where the coercive force on the magnetic recording medium has been varied, and (b) a component of magnetic field intensity of the ring head in a position in which the component is lowered at a maximum/ greatest rate in a trailing edge of the ring head recording gap in the track direction, the component being parallel to the film surface.

Applicant: M. Hamamoto, et al.
U.S.S.N. : 09/925,907
Response to Final Office Action
Page 7 of 41

Page 21, rewrite the paragraph starting at line 7, to read as follows:

Therefore, it is possible to attain the good approximation of the shape of the edge of the recordable region to the shape of the contour lines of the recording magnetic field when the edge of the recordable region is located in the position that gives substantial equality between (a) the coercive force in the region in which the coercive force of the magnetic recording medium is changed, and (b) a component, which is vertical to the film surface, of magnetic field intensity of the ring head in a position in which the component is lowered at a maximum/greatest rate in a vicinity of a position right below a leading edge of the ring head recording gap in the track direction.

Page 22, rewrite the paragraph starting at line 10, to read as follows:

Furthermore, as discussed above, in the region on the recording medium where the coercive force has been varied by the local heating means, at least a part of a region, where the coercive force and the magnetic field intensity of the ring head are equal to each other in terms of an in-plane component of the magnetic recording medium, is positioned right below the trailing edge of the ring head recording, gap in the track direction. This makes it possible to perform the recording in a region where the magnetic field intensity, which relates to the information recording, is lowered at the maximum/largest rate.